Report on
Return on Asset Value by Trust and Land Office for
Classified Forested Lands
(77-1-223-225 MCA)

Fiscal Year 2000
September 2000

Prepared By
Trust Land Management Division
Department of Natural Resources and Conservation

Introduction

This report is the result of a SB 411 passed by the 1999 Legislature requiring that the Land Board report to the beneficiaries the return on asset by trust and DNRC land office. Trust lands are managed by DNRC through six land offices located in Kalispell (the Northwestern Land Office, or NWLO), Missoula (the Southwestern Land Office or SWLO), Helena (the Central Land Office or CLO), Lewistown (the Northeastern Land Office or NELO), Billings (the Southern Land Office or SLO), and Miles City (the Eastern Land Office or ELO). See Figure 1.0.
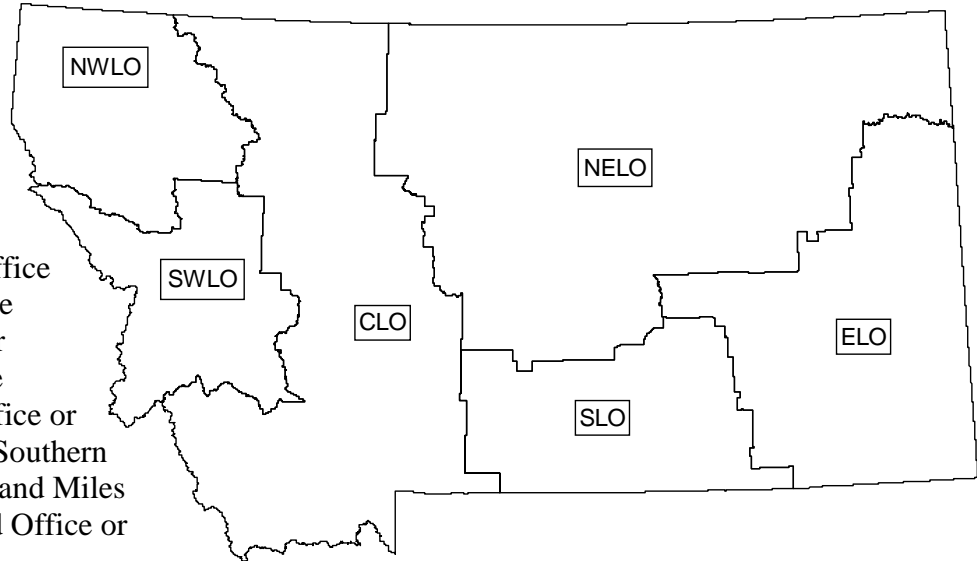

Figure 1.0 Map of Montana with Land Office Boundaries

The act, codified at 77-1-223-225 MCA requires the Board of Land Commissioners to provide annual reports regarding the average return of revenue on asset value to trust beneficiaries of forested lands. This report is for forested lands classified by 77-1-401 as Class 2 lands that are held in trust for the beneficiary. The report must include for each beneficiary:

    (1) the total acreage of forested land held in trust;
    (2) a summary of the asset value for the forested tracts held in trust;
    (3) a calculation of the average return of revenue on asset value for the forested tracts held in trust; and
    (4) a listing by each department land office of the total acreage of forested land administered for the trust beneficiary and a calculation of the average return of revenue on asset value for lands designated to the trust beneficiary.
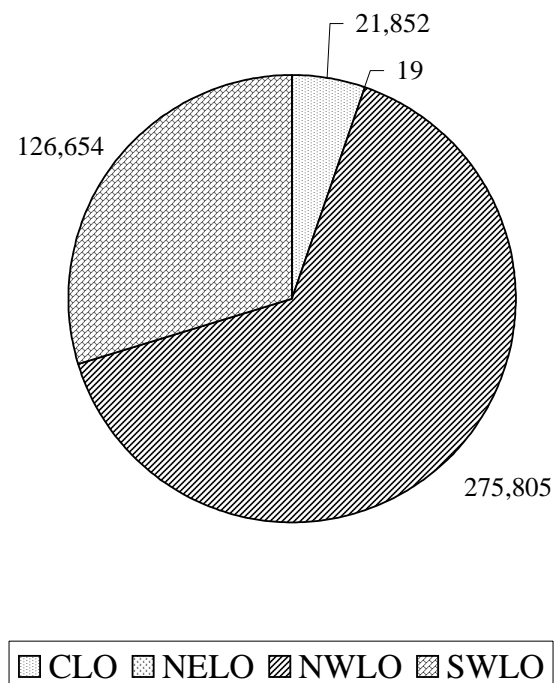
Classified Forested Acres

Table 1.0 displays the number of gross acres of classified forest lands by land office and trust. Most of the land is in the Common Schools trust and is located on the Northwestern and Southwestern Land Offices (see Table 1.0). There are no classified forest lands on the Eastern Land Office and Southern Land Office; thus, they are not included in this report. The trust abbreviations are ACB – Montana State University, ACI – Montana State University – Morrill, CS – Common School, D&DA – Deaf-Blind School, PB – Public Building, SM – Montana Tech, SNS – Eastern & Western, SRS – State Reform School and UNIV – University of Montana.

Table 1.0 Number of Gross Acres of Classified Forest Lands by Land Office and Trust									
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	Univ	Total
CLO	793	-0-	13,927	641	2,482	1,244	639	11,621	-0-	31,347
NELO	-0-	-0-	653	-0-	-0-	-0-	-0-	-0-	-0-	653
NWLO	12,791	3,495	207,815	8,852	40,994	10,961	10,816	1,643	157	297,524
SWLO	9,423	2,115	93,662	1,191	28,430	3,012	3,887	5,092	1,282	148,093
Total	23,007	5,609	316,058	10,684	71,905	15,217	15,343	18,356	1,438	477,617

The next table, Table 2.0, displays the net forest acres by trust and land office from classified forest lands. Net acres were determined by subtracting areas such as non-forested, hardwoods, cabin sites, etc. These net forest acres were multiplied by the Department of Revenue land value estimate to determine the asset value listed in Table 3.0. Figure 2.0 displays the total net forest acres of classified forest lands by land office.

Table 2.0 Number of Net Forested Acres for Classified Forest Lands by Land Office and Trust									
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	Univ	Total
CLO	509	-0-	9,511	502	2,371	1,120	540	7,299	-0-	21,852
NELO	-0-	-0-	19	-0-	-0-	-0-	-0-	-0-	-0-	19
NWLO	11,818	3,354	192,784	8,309	38,575	9,818	9,366	1,626	155	275,805
SWLO	7,944	2,069	79,002	400	26,366	2,556	3,506	4,488	322	126,654
Total	20,271	5,423	281,316	9,211	67,312	13,494	13,412	13,413	477	424,329

Figure 2.0 Total Net Forested Acres from Classified Forest Lands by Land Office

21,852
19
126,654
275,805

☐ CLO ☐ NELO ☑ NWLO ☑ SWLO

Asset Value for Classified Forest Lands

The asset value was determined using the Department of Revenue forest productivity valuation procedures (Title 15, chapter 44, part 1) for each trust beneficiary and by land office. The asset values are based on land value derived from the DOR procedures for the assessment year 1999 multiplied by the net forest acres of classified forest lands. Values are in constant 2000 dollars. Due to the low number of total and net acres in the NELO this land was dropped from tables and figures. NELO results will be summarized in a paragraph near the end of this report.

Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	Univ	Total
Table 3.0 Total Asset Value by Trust Based on Net Forest Acres for Classified Forest Lands (2000 Dollars)										
CLO	$ 156,890	$ -0-	$ 3,380,859	$ 317,363	$ 1,214,280	$ 573,058	$ 259,433	$2,418,896	-0-	$ 8,320,780
NWLO	7,383,103	2,010,218	129,242,748	5,325,442	22,996,524	6,183,296	5,939,777	1,152,548	88,442	180,322,098
SWLO	4,679,544	849,586	44,204,994	169,252	14,638,987	1,432,902	1,982,818	2,798,911	158,324	70,915,318
Total	$12,219,537	$2,859,804	$176,832,679	$5,812,057	$38,849,791	$8,189,256	$8,182,028	$6,370,355	$ 246,767	$259,562,274

The next figure (Figure 3.0) displays the total asset value by land office. Most of the value is located in the Northwestern and Southwestern Land Offices.

Figure 3.0 - Total Asset Value of Classified Forest Lands Using DOR Valuation Procedure for Assessment Year 1999

$8,320,780

$70,915,318

$180,322,098

☐ CLO ▨ NWLO ▨ SWLO
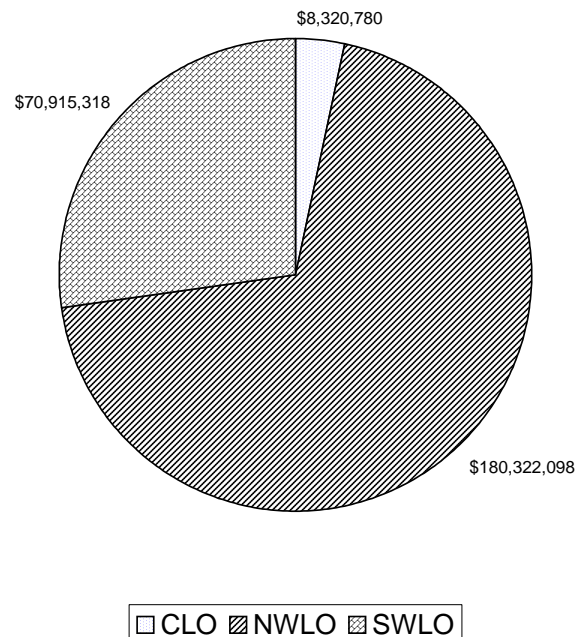
Average Annual Gross Revenue

The total average revenue is a 10-year average of the following revenue sources: forest products sales; grazing & agriculture, etc.; minerals, oil and gas; special recreational use leases and licenses; and conservation leases and licenses. Over 90 percent of the gross revenue on classified forest lands is from the forest product sale program. These values are in current 2000 dollars.

| Table 4.0 Average Total Annual Gross Revenue by Trust for Classified Forest Lands (2000 Dollars)									
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	Univ	Total
CLO	$ 862	$ -0-	$ 112,486	$ 241	$ 1,742	$ 2,214	$ 14,476	$43,340	$ -0-	$ 175,361
NWLO	163,401	30,316	2,836,701	256,455	477,427	57,772	30,333	12,222	5,186	3,869,814
SWLO	303,376	67,095	934,733	10,578	240,773	17,391	224,511	39,991	7,959	1,846,406
Total	$467,640	$97,410	$3,883,920	$267,274	$719,942	$77,377	$269,321	$95,553	$13,145	$5,891,580

Average Annual Net Revenue

The average annual net revenue was estimated by using a revenue-to-cost ratio by revenue source. The net revenue was estimated by subtracting the estimated cost from the gross revenue by source. The estimated cost was calculated by dividing the revenue-to-cost ratio into the gross revenue (see Appendix L for revenue-to-cost by revenue source). Approximately 90 percent of the net revenue is from the Forest Product Sales program. These values are in constant 2000 dollars. Table 5.0 displays the average annual total net revenue from classified forest by trust and land office.

Table 5.0 Average Annual Total Net Revenue by Trust for Classified Forest Lands (2000 Dollars)									
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	UNIV	Total
CLO	$ 598	$ -0-	$ 65,363	$ 128	$ 1,091	$ 1,564	$ 13,767	$23,414	$ -0-	$ 105,924
NWLO	72,769	13,970	1,259,798	112,269	210,924	25,821	13,703	5,383	2,291	1,716,929
SWLO	138,362	30,723	476,417	7,810	123,252	10,676	108,473	22,462	6,734	924,909
Total	$211,729	$44,693	$1,801,577	$120,207	$335,267	$38,061	$135,943	$51,259	$9,025	$2,747,762

Figure 4.0 displays the total annual net revenue from classified forest lands by land office. Once again, most of the net revenue is from the Northwestern and Southwestern Land Offices.

Figure 4.0 Average Annual Total Net Revenue from Classified Forest Lands by Land Office

$105,924

$924,909

$1,716,929

☐ CLO ▨ NWLO ▧ SWLO
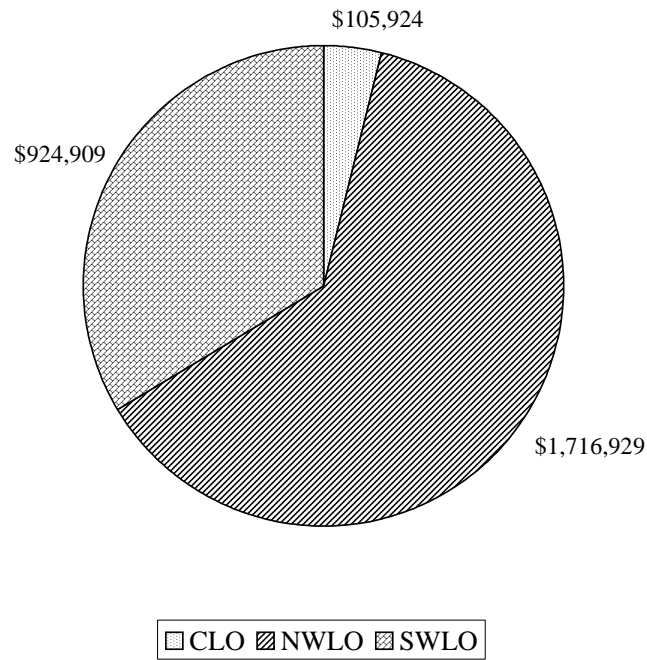
Return On Asset

The return on asset calculation is the net revenue divided by the asset value. The next two figures display the return on asset value by trust and total. Figure 5.0 is based on the net revenue and land appreciation, while Figure 6.0 is only net revenue.

Figure 5.0 Return on Asset from Classified Forest Lands With Land Appreciation
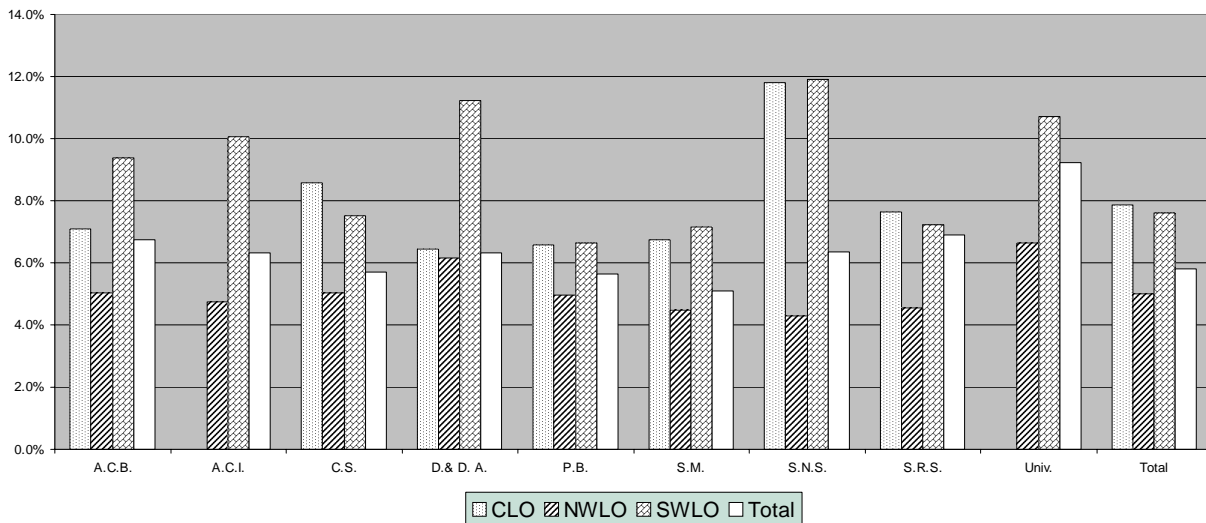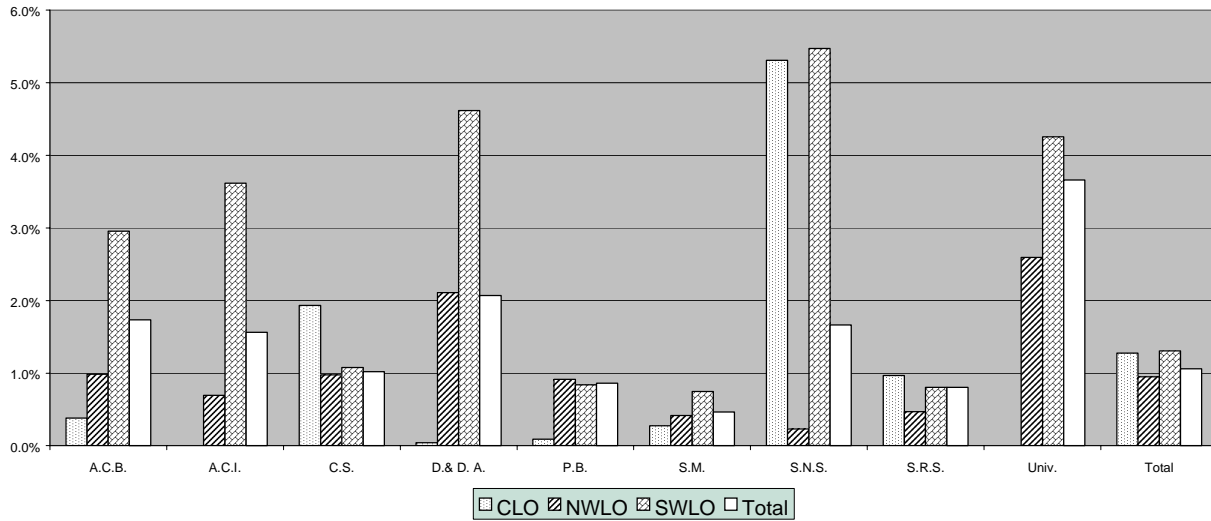
Figure 6.0 Return on Asset (Net Revenue) from Classified Forest Lands With No Land Appreciation

Tables 6.0 through 9.0 display the results of the analysis. These tables contain the net revenue, land appreciation, asset value, return on asset based revenue only, appreciation only, and total by land office and total by trust for classified forest lands. For details on the analysis see the appendixes to this report.

	Net Revenue	Land Appreciation	Asset Value	Return on Asset		
				Revenue Only	Land Appreciation Only	Total
ACB	$ 598	$ 10,537	$ 156,890	0.4%	6.7%	7.1%
ACI	-0-	-0-	-0-	0.0%	0.0%	0.0%
CS	65,363	224,676	3,380,859	1.9%	6.6%	8.3%
D&DA	128	20,388	317,363	0.0%	6.4%	6.5%
PB	1,091	78,714	1,214,280	0.1%	6.5%	6.6%
SM	1,564	37,128	573,058	0.3%	6.5%	6.7%
SNS	13,767	16,857	259,433	5.3%	6.5%	11.0%
SRS	23,414	161,515	2,418,896	1.0%	6.7%	7.7%
Univ.	-0-	-0-	-0-	0.0%	0.0%	0.0%
Total	$ 105,924	$ 549,814	$ 8,320,780	1.3%	6.6%	7.8%

Table 6.0 Net Revenue, Land Appreciation, Asset Value, and Return on Asset for the Central Land Office from Classified Forest Lands (2000 $'s)

Table 7.0 Net Revenue, Land Appreciation, Asset Value, and Return on Asset for the Northwestern Land Office from Classified Forest Lands (2000 $'s)

	Net Revenue	Land Appreciation	Asset Value	Return on Asset		
				Revenue Only	Land Appreciation Only	Total
ACB	$ 72,769	$ 299,381	$ 7,383,103	1.0%	4.1%	5.0%
ACI	13,970	81,420	2,010,218	0.7%	4.1%	4.7%
CS	1,259,798	5,250,411	129,242,748	1.0%	4.1%	5.0%
D&DA	112,269	216,092	5,325,442	2.1%	4.1%	6.2%
PB	210,924	931,286	22,996,524	0.9%	4.0%	5.0%
SM	25,821	250,784	6,183,296	0.4%	4.1%	4.5%
SNS	13,703	240,952	5,939,777	0.2%	4.1%	4.3%
SRS	5,383	46,885	1,152,548	0.5%	4.1%	4.5%
Univ.	2,291	3,577	88,442	2.6%	4.0%	6.6%
Total	$ 1,716,929	$ 7,320,790	$180,322,098	1.0%	4.1%	5.0%

Table 8. Net Revenue, Land Appreciation, Asset Value, and Return on Asset for the Southwestern Land Office from Classified Forest Lands (2000 $'s)

	Net Revenue	Land Appreciation	Asset Value	Return on Asset		
				Revenue Only	Land Appreciation Only	Total
ACB	$ 138,362	$ 301,003	$ 4,679,544	3.0%	6.4%	9.4%
ACI	30,723	54,904	849,586	3.6%	6.5%	10.1%
CS	476,417	2,844,308	44,204,994	1.1%	6.4%	7.5%
D&DA	7,810	11,175	169,252	4.6%	6.6%	11.2%
PB	123,252	851,719	14,638,987	0.8%	5.8%	6.7%
SM	10,676	92,130	1,432,902	0.7%	6.4%	7.2%
SNS	108,473	127,472	1,982,818	5.5%	6.4%	11.9%
SRS	22,462	180,122	2,798,911	0.8%	6.4%	7.2%
Univ.	6,734	10,199	158,324	4.3%	6.4%	10.7%
Total	$ 924,909	$ 4,473,033	$ 70,915,318	1.3%	6.3%	7.6%

Table 9.0 Net Revenue, Land Appreciation, Asset Value, and Return on Asset from All Classified Forest Lands (2000 $'s)

	Net Revenue	Land Appreciation	Asset Value	Return on Asset		
				Revenue Only	Land Appreciation Only	Total
ACB	$ 211,729	$ 610,921	$ 12,219,537	1.7%	5.0%	6.7%
ACI	44,693	136,324	2,859,804	1.6%	4.8%	6.3%
CS	1,801,577	8,319,724	176,832,679	1.0%	4.7%	5.7%
D&DA	120,207	247,655	5,812,057	2.1%	4.3%	6.3%
PB	335,267	1,861,719	38,849,791	0.9%	4.8%	5.7%
SM	38,061	380,042	8,189,256	0.5%	4.6%	5.1%
SNS	135,943	385,281	8,182,028	1.7%	4.7%	6.4%
SRS	51,259	388,522	6,370,355	0.8%	6.1%	6.9%
Univ.	9,025	13,777	246,767	3.7%	5.6%	9.2%
Total	$ 2,747,762	$ 12,343,964	$259,562,274	1.1%	4.8%	5.8%

Table 10.0 is a summary of the return on asset for classified forest lands, including both net revenue and land appreciation.

| Table 10.0 Return on Asset for Classified Forest Lands – Based on Net Revenue and Appreciation | | | | | | | | | |
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	UNIV	Total
CLO	7.1%	0.0%	8.6%	6.5%	6.6%	6.8%	11.8%	7.6%	0.0%	7.9%
NWLO	5.0%	4.7%	5.0%	6.2%	5.0%	4.5%	4.3%	4.5%	6.6%	5.0%
SWLO	9.4%	10.1%	7.5%	11.2%	6.7%	7.2%	11.9%	7.2%	10.7%	7.6%
Total	6.7%	6.3%	5.7%	6.3%	5.7%	5.1%	6.4%	6.9%	9.2%	5.8%

Gross Returns

Table 11.0 is the return on asset calculation using gross revenue and land appreciation.

| Table 11.0 Return on Asset for Classified Forest Lands – Based on Gross Revenue and Land Appreciation | | | | | | | | | |
Land Office	ACB	ACI	CS	D&DA	PB	SM	SNS	SRS	Univ	Total
CLO	7.3%	0.0%	10.0%	6.5%	6.6%	6.9%	12.1%	8.5%	0.0%	8.7%
NWLO	6.3%	5.6%	6.3%	8.9%	6.1%	5.0%	4.6%	5.1%	9.9%	6.2%
SWLO	12.9%	14.4%	8.5%	12.9%	7.5%	7.6%	17.8%	7.9%	11.5%	8.9%
Total	8.8%	8.2%	6.9%	8.9%	6.6%	5.6%	8.0%	7.6%	10.9%	7.0%

Northeastern Land Office

The Northeastern Land Office, headquartered in Lewistown, has only one section of land that is classified forest. This section has 653 acres, of which 19 acres meets the definitions used by DOR for forest. This leads to an asset value of $4,079 using DOR procedures. The total gross revenue from timber product sale and oil and gas leasing for the last ten years in 2000 dollars was $8,381 while the net revenue equaled an approximate value of $4,000. Using the asset and these revenue estimates the return on asset is over 100% for net and over 200% for gross. This high return is the result of the low number of acres used in the asset value, a recent timber sale that harvested timber from the section and revenue from oil and gas leasing the in mid to late 1990's. This section is currently unleased for oil and gas.

Conclusions

The average net return on asset from classified forest for all the trusts is 5.7%, which includes land appreciation. The income return from the Trust and Legacy funds, based on current market conditions, is expected to stay in 7-8 percent range over the next few years according to the Board of Investments.

Using the gross revenue to calculate the return on asset increases it to 6.8%. Management costs have a relatively minor effect on the overall return. For example, cutting management costs by 50% can increase this return by approximately .56%. The majority of the return on asset value is in land appreciation.

Bob Bugni, CFA is Assistant Investment Office-Fixed Income with the Montana Board of Investments. He was asked the following question: "Given your knowledge of investment analysis, would you recommend converting some of the land portion of the trust into cash that would be invested in the Trust & Legacy fund?" The following is his response.

> "Selling land and reinvesting the proceeds in the Trust & Legacy (T&L) account should increase the income yield. New cash flow can currently be invested at a 7.5 to 8.0 percent bond equivalent yield. However, over the long-term, this may not be the best investment choice. The T&L account, by constitution, is prohibited from investing in common stocks. Therefore, investments are limited to bonds. Historically, bonds return less than stocks and bonds do not protect the investor from inflation. Over the long-term, real estate (including land) produces a higher total return than bonds. Real estate produces less current income than bonds but part of the total return comes from appreciation. Bonds do not generally appreciate in value over time. Therefore, real estate is a better hedge against inflation than bonds. The income yield increases over time when the investor raises rental rates plus the buying power of investment increases over time as the land value increases."